

WHAT IS CLAIMED IS:

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1. A communication method used when a mobile station receives a signal from a base station in a mobile communication system, comprising the steps of:

- 10           deciding one or a plurality of mobile stations which can communicate with said mobile station via a predetermined wireless network and which can receive a signal from said base station;
- said one or a plurality of mobile stations
- 15   sending a signal destined for said mobile station received from said base station to said mobile station via said predetermined wireless network; and
- said mobile station synthesizing a signal received from said base station and said signal
- 20   destined for said mobile station received from said one or a plurality of mobile stations.

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2. The communication method as claimed in claim 1, further comprising the steps of:

- forming said predetermined wireless network by said mobile station and other mobile
- 30   stations in said mobile communication system;
- selecting said one or a plurality of mobile stations among said other mobile stations as mobile stations for diversity reception; and
- said one or a plurality of mobile stations
- 35   selected as used for diversity reception of said mobile station sending said signal destined for said mobile station received from said base station to

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selecting said one or a plurality of  
10 mobile stations among said other mobile stations  
such that communication condition between said one  
or a plurality of mobile stations and said base  
station is better than predetermined condition.

20                    selecting said one or a plurality of  
mobile stations among said other mobile stations  
such that each level of signals received from said  
base station by said one or a plurality of mobile  
stations is higher than a predetermined level.

said mobile station sending participation requests which are requests to operate for diversity reception of said mobile station, to said one or a plurality of mobile stations via said predetermined wireless network;

each mobile station which receives said participation request determines whether said each

mobile station can receive a signal from said base station;

each mobile station which can receive a signal from said base station recognizing that said  
5 each mobile station operates for diversity reception of said mobile station which sends said participation request, and sending a participation response which indicates acceptance of said participation request to said mobile station via  
10 said predetermined wireless network; and

said mobile station recognizing that said each mobile station which sends said participation response operates for diversity reception of said mobile station.

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6. The communication method as claimed in  
20 claim 5, further comprising the steps of:

said each mobile station which receives said participation request measuring a state of receiving a signal from said base station;

said each mobile station in which said  
25 state is better than a predetermined state recognizing that said each mobile station operate for diversity reception of said mobile station and sending said reception response to said mobile station via said predetermined wireless network.

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7. The communication method as claimed in  
35 claim 1, wherein said predetermined wireless network is a mobile ad-hoc network.

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8. A mobile station which receives a  
5 signal from a base station in a mobile communication  
system, comprising:

a first transceiver unit which transmits  
and receives a signal between said mobile station  
and said base station;

10 a second transceiver unit which transmits  
and receives a signal between said mobile station  
and a first mobile station;

network forming control means which forms  
a predetermined wireless network including said  
15 mobile station and said first mobile station by  
communicating with said first mobile station by  
using said second transceiver unit; and

signal synthesizing means which  
synthesizes a signal received from said base station  
20 by said first transceiver unit and a signal destined  
for said mobile station received from said first  
mobile station by said second transceiver unit via  
said predetermined wireless network.

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9. The mobile station as claimed in claim  
8, further comprising;

30 transfer control means which sends a  
signal destined for a second mobile station received  
by said first transceiver unit to said second mobile  
station via said predetermined wireless network by  
said second transceiver unit.

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participation request send control means  
5 which sends a participation request to said first  
mobile station by said second transceiver unit via  
said predetermined wireless network, said  
participation request being a request to operate for  
diversity reception of said mobile station;

wherein said signal synthesizing means synthesizes a signal received from said base station by said first transceiver unit and a signal destined for said mobile station received from said first mobile station by said second transceiver unit via said predetermined wireless network, said first mobile station being stored in said first storing means.

first determining means which determines whether a signal from said base station can be received when said second transceiver unit receives a participation request from said second mobile station, said participation request being a request to operate for diversity reception of said second

mobile station;

second storing means which stores said second mobile station when said first determining means determines that a signal from said base station can be received;

participation response control means which sends a participation response, to said second mobile station from which said participation request is received, by using said second transceiver unit via said predetermined wireless network, said participation response indicating that said mobile station accepts said participation request; and

wherein said transfer control means sends, by said second transceiver unit, a signal destined for said second mobile station to said second mobile station when said first transceiver unit receives said signal destined for said second mobile station, said second mobile station being stored in said second storing means.

12. The mobile station as claim in claim 11, further comprising:

receive state measuring means which measures a state of receiving a signal from said base station when said second transceiver unit receives said participation request from said second mobile station via said predetermined wireless network;

second determining means which determines whether said state measured by said receive state measuring means is better than a predetermined state;

wherein said second mobile station which sends said participation request is stored in said

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second storing means and said participation response control means sends said participation response, by said second transceiver unit, to said second mobile station via said predetermined wireless network when  
5 said first determining means determines that a signal from said base station can be received and when said second determining means determines that said state is better than said predetermined state.

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13. The mobile station as claimed in claim 8, wherein said predetermined wireless network  
15 formed by said network forming control means is a mobile ad-hoc network.

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